UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

AUG 05 2004

Ms. Mimi Drew, Director
Division of Water Resource Management
Florida Department of Environmental Protection
Twin Towers Office Building
Mail Station 3500
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Ms. Drew:

The Environmental Protection Agency (EPA) has completed its review, as documented in the enclosed memorandum, for the Dissolved Oxygen (DO) Site Specific Alternative Criterion (SSAC) for the Amelia River segment located between the northern mouth of the river and the crossing of the A1A Highway. The Florida Department of Environmental Protection (FDEP) adopted the SSAC by final order which became effective on June 22, 1985. FDEP initially submitted the SSAC to EPA for 303(c) review on August 6, 1985. Since that review never resulted in a final action, Teri L. Donaldson, General Counsel for FDEP submitted a second request for a 303(c) review to James Palmer, Regional Administrator, EPA Region 4, by letter dated October 24, 2003. This letter included a certification consistent with the requirements of 40 CFR Part 131.6(e), indicating that the revision to Florida water quality standards "is a valid and final order of the Department, and not subject to any appeal."

The DO SSAC establishes revised water quality criteria for the aforementioned segment of the Amelia River, which remains classified and protected for all designated uses of Class III marine waters, including recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The revised marine criterion requires that the "alternative dissolved oxygen criterion in the months of July through September is established at a minimum of 3.2 milligrams per liter during low tide in this portion of the river. During all other conditions, the dissolved oxygen shall not be below 4.0 milligrams per liter. The 24-hour average dissolved oxygen shall be 5.0 milligrams per liter." The revised criterion is based on FDEP's analysis of data collected at a reference site in the Nassau River watershed, which is contiguous with and located within the same ecoregion as the Amelia River watershed to the south.

Based on EPA's review and analysis of the supporting documentation provided by FDEP for the Amelia River DO SSAC, it is our conclusion that the requirements of the Clean Water Act and provisions of 40 CFR Part 131 have been met. Therefore, based on the authorities of Section 303(c) of the Clean Water Act, I am approving the Amelia River DO SSAC as a revision to Florida water quality standards.

The revised water quality criteria established by this SSAC and the recently approved Everglades DO SSAC should be incorporated in the Florida Administrative Code to ensure a complete record of approved water quality alternate criteria for waters of the State. (See 40 CFR Part 131.2, 40 CFR Part 131.11, and F.R. 65, No. 82, April 27, 2000). The latest point in time this should be incorporated is by completion of the State's triennial review.

If you have questions concerning this action, please do not hesitate to call me at (404) 562-9470, or Cecelia Harper, Florida Standards Coordinator at (404) 562-9418.

Sincerely,

for James D. Giattina, Director
Water Management Division

Enclosure

cc: Tom Beason, FDEP
Stacey Cowley, FDEP
Jerry Brooks, FDEP
Frank Nearhoof, FDEP
Greg Knecht, FDEP
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JUL 2 8 2004

TO: Gail Mitchell, Chief
Standards, Monitoring, and TMDL Section

THRU: Andrew Bartlett, Chief
East Standards, Monitoring, and TMDL Section

FROM: Cecelia Ann Harper, Environmental Scientist
East Standards, Monitoring, and TMDL Section

SUBJECT: Review of Amelia River Site Specific Alternative Criteria (SSAC) for Dissolved Oxygen (DO)

Review of the state of Florida's revised water quality criterion submittal for DO for the Amelia River segment located between the northern mouth of the river and the crossing of the A1A Highway is complete. The Florida Department of Environmental Regulation (FDEP) adopted the SSAC by final order which became effective on June 22, 1985. FDEP initially submitted the SSAC to EPA for 303(c) review on August 6, 1985. Since that review never resulted in a final action, Teri L. Donaldson, General Counsel for the FDEP submitted a second request for a 303(c) review to James Palmer, Regional Administrator, EPA Region 4 by letter dated October 24, 2003. The submittal letter included a certification consistent with the requirements of 40 CFR Part 131.6(e), indicating that the revision to Florida water quality standards "is a valid and final order of the Department, and not subject to any appeal."

Statewide Criterion Modified and Authority to Modify

The Class III marine water quality criterion applies to all Class III marine waters in the State of Florida, except where a SSAC has been established for a particular water body. The statewide criterion is contained in the Florida Administrative Code (F.A.C.) 62-302.530(31), and states that DO:

> "Shall not average less than 5.0 mg/L in a 24-hour period and shall never be less than 4.0 mg/L. Normal daily and seasonal fluctuations above these levels shall be maintained."

The F.A.C. Section 62-302.800 titled Site Specific Alternative Criteria, includes the following requirements for the development of a SSAC:

> (1) A water body, or portion thereof, may not meet a particular ambient water quality criterion specified for its classification, due to natural background conditions . . . . In such circumstances, and upon petition by an affected person or upon the initiation by the Department, the Secretary may establish a site specific alternative water quality criterion when an affirmative demonstration is made that an alternative criterion is more appropriate for a specified portion of waters of the state. Public hearing and an opportunity for public hearing shall be provided prior to issuing any order establishing alternative criteria.
>
> (a) The affirmative demonstration required by this section shall mean a documented showing that the proposed alternative criteria would exist due to natural background conditions...Such demonstration shall be based upon relevant factors which include:
>
> 1. A description of the physical nature of the specified water body and the water pollution sources affecting the criterion to be altered.
>
> 2. A description of the historical and existing water quality of the parameter of concern including, spatial, seasonal, and diurnal variations, and other parameters or conditions which may affect it. Conditions in similar water bodies may be used for comparison.
>
> 3. A description of the historical and existing biology, including variations, which may be affected by the parameter of concern. Conditions in similar water bodes may be used for comparison.
>
> 4. A discussion of any impacts of the proposed alternative criteria on the designated use of the waters and adjoining waters.
>
> (b) The Secretary shall specify, by order, the site specific criteria for the parameters which the Secretary determines to have been demonstrated by the preponderance of competent substantial evidence to be more appropriate.

Modified Criterion Language

The provisions of the Amelia River SSAC are as follows:

> Affected is a portion of the Amelia River between the northern mouth of the river and the crossing of A1A Highway. The alternative dissolved oxygen criterion in the months of July through September is established at a minimum of 3.2 milligrams per liter during low tide in this portion of the river. During all other conditions, the dissolved oxygen shall not be below 4.0 milligrams

per liter. The 24-hour average dissolved oxygen shall be 5.0 milligrams per liter.

Technical Basis for the Modified Criterion

EPA guidance provides that a State may establish water quality criteria based on naturally-occurring conditions in a water body that provides for full protection of the water body's CWA Section 101(a) aquatic life designated uses. Specifically:

> For aquatic life uses, where the natural background concentration for a specific parameter is documented, by definition that concentration is sufficient to support the level of aquatic life expected to occur naturally at the site absent any interference by humans. See: "Establishing Site Specific Aquatic Life Criteria Equal to Natural Background", from Tudor T. Davies, Director, Office of Science and Technology to Water Management Division Directors, Region 1-10, November 5, 1997.

FDEP developed a scientifically defensible approach for the Amelia River SSAC by: 1) establishing that the Nassau River can appropriately serve as a reference site, 2) documenting that the conditions of the Amelia River SSAC naturally occur in the Nassau River where protection of the existing and designated uses are maintained, and 3) documenting that the Nassau River is an appropriate reference site for the Amelia River by linking their similarities (e.g. hydrology, ecology, and physical).

Technical Analysis of the Modified Criterion

FDEP used several factors to establish the Nassau River as a reference site. It is noted that the Nassau River – St. John's River Marshes State Aquatic Preserve (approximately 57,000 acres) was established on November 24, 1969 to preserve the biological resources of the Nassau Sound area marshes and associated waters. The Landscape Development Intensity Index (LDI) methodology was used to determine an index of the human disturbance gradient (the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters) for the Nassau River. A very low LDI score of 1.3 was calculated for Nassau River's surrounding basin demonstrating a lack of land uses that would generate anthropogenic sources to reduce dissolved oxygen in the system. In addition, there are no permitted point sources in the basin that would contribute oxygen demanding substances. The Nassau River's landscape position is contiguous with and to the south of the Amelia River. Both River systems are located in the Sea Islands Flatwoods area of the South Coastal Plain ecoregion, and share similar geology and biology. Both the Amelia and Nassau River systems are high in salinity and experience two daily tides of approximately 2 meters that lead to rapid tidal-induced water velocities and extremely good flushing. Lastly, dissolved oxygen measurements from ten sampling stations in the Nassau River were utilized by Livingston (2001) to define the background dissolved oxygen regime that was characterized as being of high quality.

FDEP established that the conditions provided for in the Amelia River SSAC naturally occur in the Nassau River reference site. The Nassau and Amelia Rivers are located in an ecoregion characterized by broad coastal barrier islands, salt marshes, plains, pine flatwoods, and swamps. The extensive marsh and swamp systems adjacent to the rivers contribute vast amounts of leaf litter that in turn cause the waters to contain high amounts of organic tannins, lignans, and other humic acid substances. These naturally occurring water quality conditions contribute to periods of low dissolved oxygen in both estuaries. FDEP reviewed chemical monitoring data particularly that collected by Dr. Livingston between June 1990 and March 1997 and provided data tables for the River systems which document similar DO conditions in both Rivers as supporting documentation for the SSAC. The DO data showed conditions in the Nassau River exhibit significant seasonal variability with the lowest concentrations during the summer months (May to September). DO levels were below 4.0 mg/L approximately 10% of the time due to natural background conditions in the Nassau River. DO concentrations collected within the Amelia River by Dr. Livingston show the same seasonal variation as the Nassau River and an inverse relationship between temperature and DO values (i.e. high seasonal temperatures yield low DO values).

FDEP concluded that:

1. Both systems are contained in the same ecoregion with similar soils, tide and habitat conditions, physiography, and climate (hot temperatures in the summer).

2. The Nassau system is a Florida Aquatic Preserve, consisting of ecologically benign land uses, demonstrated by a very low LDI index score. Further there are no permitted point sources discharging to the system.

3. Low dissolved oxygen in the Nassau is explained by a combination of large loads of humic substances from swamps, marshes, and flatwood inputs; and settling and decomposition of the natural organic load (detritus) coupled with high summer temperatures.

4. The lack of a statistically different frequency of occurrence of low dissolved oxygen in the Amelia system, when compared with the Nassau system, indicates that the human discharges in the Amelia system are not the cause for the low dissolved oxygen there (Livingston 2001).

Since the provisions of this SSAC establish scientifically defensible DO water quality criteria for the specified segment of the Amelia River as DO occurs in background concentrations due only to non-anthropogenic sources, the SSAC is consistent with EPA's aforementioned guidance. In addition, EPA has determined that the State's methodology used to establish the SSAC, is based on a scientifically defensible approach for criteria development, and therefore; meets the requirements of 40 CFR Part 131.11(b)(1)(iii). By retaining the marine Class III use for the waters to which the DO SSAC applies, the designated uses for the Amelia River segment will continue to meet the requirement of Clean Water Act Section 101(a)(2).

Endangered Species Act (ESA) and Essential Fish Habitat Consultation

With regard to consultation activities for Section 7 of the ESA, EPA Region 4 has concluded that the Agency's action to approve the revision to Florida water quality standards will have "no effect" on listed species or their critical habitat. EPA will communicate the Agency's "no effect" decision with the U.S. Fish and Wildlife Service and National Marine Fishery Service by providing them a copy of our approval letter for the Amelia River SSAC.

Conclusion

Based on the analysis of the information FDEP submitted to EPA, it is the Agency's conclusion that the requirements of the Clean Water Act and 40 CFR Part 131 have been met and that approval of the Amelia River DO SSAC is appropriate.